The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FREDERICK J. REZNAK

Appeal No. 1999-2416
Application No. 08/705,449

ON BRIEF

Before BARRETT, GROSS, and BLANKENSHIP, Administrative Patent Judges.

BLANKENSHIP, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-3, 5, 6, 8-10, 12, 13, 15-18, 20, 21, and 23, which are all the claims remaining in the application.

We reverse.

BACKGROUND

The invention is directed to a multitasking data processing system and a method of controlling allocation of shared resources within the system. Representative claim 1 is reproduced below.

> 1. A method of controlling allocation of shared resources within a multitasking data processing system having a plurality of tasks, said method comprising:
>
> in response to a resource request for a portion of a shared resource by a particular task among said plurality of tasks, determining whether or not granting said resource request would cause a selected level of resource allocation to be exceeded and determining whether or not granting said resource request would cause a resource allocation limit to be exceeded;
>
> in response to a determination that granting said resource request would cause said resource allocation limit to be exceeded, denying said resource allocation request;
>
> in response to a determination that granting said resource request would not cause said selected level of resource allocation to be exceeded, granting said resource request; and
>
> in response to a determination that granting said resource request would cause said selected level of resource allocation but not said resource allocation limit to be exceeded, suspending execution of said particular task for a selected penalty time and then granting said request.

The examiner relies on the following references:

Ferguson et al. (Ferguson)	5,210,872	May 11, 1993
Camillone et al. (Camillone)	5,421,011	May 30, 1995

Claims 1-3, 5, 6, 8-10, 12, 13, 15-18, 20, 21, and 23 stand rejected under 35 U.S.C. § 103 as being unpatentable over Camillone and Ferguson.

We refer to the Final Rejection (mailed Jul. 20, 1998) and the Examiner's Answer (mailed Mar. 29, 1999) for a statement of the examiner's position and to the Brief (filed Jan. 11, 1999) for appellant's position with respect to the claims which stand rejected.

OPINION

In the statement of the section 103 rejection of claim 1 (Final Rejection at 3-4), Camillone is relied upon as teaching two limits for controlling allocation of shared resources: an allocation limit and a selected limit (i.e., a soft limit described at column 9, lines 3 through 5 of the reference). Camillone is recognized as not teaching suspending execution of a particular task for a selected penalty time. The rejection turns to Ferguson for the teaching of suspending execution of a particular task for a selected penalty time. The subject matter of claim 1 is deemed to be rendered obvious by the references, using "two limits...so that the objects of Ferguson can provide a task scheduling method for a real time computer system having automatic memory management." (Final Rejection at 4.)

Appellant argues (Brief at 4) the examiner has not cited any objective teaching that would have led the artisan "to apply allocation quotas for user accounts as taught by *Camillone* to per-task resource allocation quotas as taught by *Ferguson*." The examiner responds (Answer at 3-4), referring to columns 3 and 4 of Camillone, that the reference discloses that resource account identifiers are indicated for each process, and that processes are divided into critical and non-critical processes. Ferguson is

represented as being directed to handling resource requirements of critical and non-critical tasks and deemed to complement the teachings of Camillone.

We find that Camillone describes, at column 8, line 49 through column 9, line 5, operation of the conventional UNIX disk quota subsystem. Each user is given a particular quota for disk space. If the user requests an allocation that is over quota, the request is denied. The quota implementation also contains "soft limits" which are used to provide warnings, but the details are not of interest in Camillone's disclosure of the invention. The reference also describes conventional UNIX systems at column 1, line 59 through column 2, line 10. Again there is mention of "disk quotas" set by system administrators to allocate disk space to specified users. The Berkeley Software Distribution (BSD) version of UNIX is presented as providing a way to limit resource consumption by a process. The controls under BSD may limit "processing time, maximum file size, core file size, memory usage, process stack size and process data segment size" (col. 1, ll. 65-67), although the controls are not considered "quotas."

Ferguson describes ("Detailed Description," columns 2 through 6) management of critical and non-critical tasks in real-time computer systems. Should a request for memory allocation by a non-critical task exceed the memory allocation quota for that particular task, execution of the task is suspended, to be restarted by a scheduler at an appropriate time. Col. 5, l. 37 - col. 6, l. 3. Although described in terms of memory allocation, the disclosed method "could be used for any resource that is consumed in bits per unit of time." Col. 6, ll. 9-11.

In view of the objective teachings of the references, we agree with appellant that the rejection of instant claim 1 is not well founded. In our opinion the artisan would not have considered Ferguson's teachings with respect to managing resource allocation requests for non-critical tasks to have relevance with respect to administration of a disk quota subsystem as disclosed by Camillone. We find the Camillone reference to disclose the UNIX disk quota subsystem as separate from management of resource consumption by a process. Although the references address critical and non-critical tasks and processes, Camillone's description of two levels of resource allocation is in reference to the conventional UNIX disk quota subsystem. We find no reason that the artisan would have been led to modify the "soft limits" -- presumably providing warnings in response to requests for disk space approaching a level that will be denied -- such that execution of effecting the request is suspended and rescheduled at an appropriate time. Nor has the examiner provided any convincing rationale for the combination proposed.

Each of independent claims 8 and 16 requires a "shared resource allocation controller" which performs the method as substantially set forth in instant claim 1. Yet, the statement of the rejection (Final Rejection at 4-5) does not refer to all portions of the references that were addressed in the rejection against claim 1.[1] We do not find

[1] The Final Rejection at page 6 refers again to the "quota" and "soft limit" described at column 9, lines 1 through 5 of Camillone as teaching the "allocation limit" and "selected level." Both the "resource allocation limit" and "selected level of resource allocation" are relevant to requirements of claims 8 and 16.

disclosure or suggestion of the requirements of the claimed shared resource allocation controller in the references applied.

We also agree with appellant (Brief at 5) that Ferguson fails to teach suspending execution of a task for a selected penalty time and then granting the request, as required by each of the independent claims. The examiner quotes from Ferguson and states that "[t]his is what is recited in claim 1." (Answer at 5.) In our interpretation of the relevant section of Ferguson at column 5, line 37 through column 6, line 11 (as illustrated by Figure 5), a blocked task may be scheduled to run at a later time. However, that the task runs at a later time does not mean that the task's resource request will be granted at the later time. If a task attempts to consume more than its quota, the task is caused to relinquish processor 21 during any activation of the task.

We thus conclude that a prima facie case for unpatentability has not been established for any of the independent claims (1, 8, or 16) on appeal. We do not sustain the rejection of claims 1-3, 5, 6, 8-10, 12, 13, 15-18, 20, 21, and 23 under 35 U.S.C. § 103 as being unpatentable over Camillone and Ferguson.

CONCLUSION

The rejection of claims 1-3, 5, 6, 8-10, 12, 13, 15-18, 20, 21, and 23 under 35 U.S.C. § 103 is reversed.

REVERSED

LEE E. BARRETT Administrative Patent Judge	)
ANITA PELLMAN GROSS Administrative Patent Judge	) BOARD OF PATENT) APPEALS) AND) INTERFERENCES
HOWARD B. BLANKENSHIP Administrative Patent Judge	)

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